

Appl. No. 09/514,526
Reply to Office Action of March 7, 2003

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

The claims 18-37 currently pending in the application are as follows.

1-17. (Canceled)

18. (currently amended) An apparatus electrical structure, comprising:

a chromium volume, wherein said chromium volume is operationally positioned in a conveyorized processing apparatus, said apparatus further including a spray applicator for dispensing an acid solution;

a conveyorized device adapted to receive a chromium volume; and

a spray applicator adapted to dispense an acid solution proximate said chromium volume,

said spray applicator operationally coupled to said conveyorized device;

wherein said chromium volume is in continuous electrical contact, at a contact surface,

with both an iron-comprising body and said acid solution in continuous electrical contact with the chromium volume; and

said acid solution in continuous contact with both the chromium volume and the iron-comprising body, wherein the chromium volume is being etched at an etch rate by said acid solution

wherein said chromium volume comprises a surface, said surface being etched at an etch rate by said acid solution.

19. (currently amended) The apparatus electrical structure of claim 18, wherein the apparatus electrical structure further comprises a chromium oxide layer on the chromium volume.

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1 20. (currently amended) The apparatus ~~electrical structure~~ of claim 18, wherein the acid
2 solution includes hydrochloric acid in a liquid bath form.

1 21. (currently amended) The apparatus ~~electrical structure~~ of claim 18, wherein the acid
2 solution includes hydrochloric acid in a spray form.

1 22. (currently amended) The apparatus ~~electrical structure~~ of claim 18, wherein said iron-
2 comprising body includes steel.

1 23. (currently amended) The apparatus ~~electrical structure~~ of claim 18, further comprising a
2 layer of conductive metal, wherein the chromium volume includes a layer of chromium, and
3 wherein the layer of chromium is on the layer of conductive metal.

1 24. (currently amended) The apparatus ~~electrical structure~~ of claim 23, wherein the acid
2 solution is not in contact with the layer of conductive metal.

1 25. (currently amended) The apparatus ~~electrical structure~~ of claim 24, wherein the iron-
2 comprising body includes steel, wherein the acid solution includes hydrochloric acid, and
3 wherein the layer of conductive metal includes a metal selected from the group consisting of
4 copper, aluminum, nickel, silver, and gold.

1 26. (previously amended) An electrical structure, comprising:
2 a chromium volume, wherein said chromium volume is operationally positioned in a
3 conveyORIZED processing apparatus, said apparatus further including a spray applicator for
4 dispensing an acid solution;
5 an iron-comprising body in continuous electrical contact with the chromium volume; and
6 said acid solution in continuous contact with both the chromium volume and the iron-
7 comprising body, wherein the chromium volume is being etched at an etch rate by said acid

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8 solution; and)

9 a layer of conductive metal, wherein the chromium volume includes a layer of chromium,
10 wherein the layer of conductive metal is on the layer of chromium, wherein the conductive metal
11 includes an opening extending through its thickness, wherein the opening exposes the layer of
12 chromium, wherein the iron-comprising body is in continuous electrical contact with the
13 chromium volume, and wherein the acid solution is in contact with both the iron-comprising
14 body and the chromium volume within the opening.

1 27. (original) The electrical structure of claim 26, wherein the iron-comprising body includes
2 steel, wherein the acid solution includes hydrochloric acid, and wherein the layer of conductive
3 metal includes a metal selected from the group consisting of copper, aluminum, nickel, silver,
4 and gold.

1 28. (currently amended) The ~~apparatus electrical structure~~ of claim 18, wherein the iron-
2 comprising body includes steel, wherein the chromium volume includes metallic chromium,
3 wherein the acid solution includes hydrochloric acid, wherein a temperature (T) and a molarity
4 (M) of the hydrochloric acid is within a triangular space defined by (T,M) points of (21 °C, 2.4
5 M), (52 °C, 2.4 M), and (52 °C, 1.2 M), and wherein the etch rate is at least a factor of about 2
6 greater than an etch rate that would occur in an absence of the iron-comprising body.

1 29. (currently amended) The ~~apparatus electrical structure~~ of claim 18, wherein the iron-
2 comprising body includes steel, wherein the chromium volume includes metallic chromium,
3 wherein the acid solution includes hydrochloric acid, wherein a temperature (T) and a molarity
4 (M) of the hydrochloric acid is within a triangular space defined by (T,M) points of (21 °C, 2.4
5 M), (52 °C, 2.4 M), and (52 °C, 1.2 M), and wherein the etch rate is at least about 5 Å/second.

1 30. (currently amended) The ~~apparatus electrical structure~~ of claim 18, further comprising a
2 fluoropolymer dielectric volume bonded to said chromium volume.

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- 1 31. (previously added) An electrical structure, comprising:
2 a chromium volume;
3 an iron-comprising body in continuous electrical contact with the chromium volume,
4 wherein the iron comprising body includes steel; and
5 an acid solution in continuous contact with both the chromium volume and the iron-
6 comprising body, wherein the chromium volume is being etched at an etch rate.
- 1 32. (previously added) The electrical structure of claim 31, wherein the electrical structure
2 further comprises a chromium oxide layer on the chromium volume.
- 1 33. (previously added) The electrical structure of claim 31, further comprising a layer of
2 conductive metal, wherein the chromium volume includes a layer of chromium, and wherein the
3 layer of chromium is on the layer of conductive metal.
- 1 34. (previously added) The electrical structure of claim 33, wherein the acid solution is not in
2 contact with the layer of conductive metal.
- 1 35. (previously added) The electrical structure of claim 34, wherein the acid solution includes
2 hydrochloric acid, and wherein the layer of conductive metal includes a metal selected from the
3 group consisting of copper, aluminum, nickel, silver, and gold.
- 1 36. (previously added) The electrical structure of claim 31, wherein the chromium volume
2 includes metallic chromium, wherein the acid solution includes hydrochloric acid, wherein a
3 temperature (T) and a molarity (M) of the hydrochloric acid is within a triangular space defined
4 by (T,M) points of (21 °C, 2.4 M), (52 °C, 2.4 M), and (52 °C, 1.2 M), and wherein the etch rate
5 is at least about 5 Å/second.

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37. (previously added) The electrical structure of claim 31, further comprising a
fluoropolymer dielectric volume bonded to said chromium volume.
